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10/028,730	10/19/2001	Michael Collins	00-682	4112

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EXAMINER	
LIU, HAN L	

ART UNIT	PAPER NUMBER
3746	9

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/028,730	Applicant(s) COLLINS ET AL.	
	Examiner Han Lieh Liu	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1 – 3, 17 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Gunn et al. (USPN 5820352).

Gunn et al. disclose an apparatus for monitoring a compressor (12) in Fig. 2, comprising: a plurality of sensor inputs (temperature sensors 44, 46, 48 and 49, pressure sensors 50 and 52, speed sensor 54) for regarding operating parameters of a compressor (12); at least one control action output for sending a control action to said compressor (12) via control loop (90); and a control member (42) communicated with said plurality of sensor inputs and said control action output as indicated in the block diagram in Fig. 2, said control member being adapted to analyze input from plurality of sensor inputs, to determine a control action via control loop (92) and speed control routine (300, Fig. 8) and discharge pressure control routine (200, Fig. 9), wherein said control action (400, Fig. 10) includes actions for immediate protection (shut down routine 404) and alert routine (414) while the compressor is continue to be operated, column 4 line 50 – column 7 line 34; and adjusting commands for prime mover speed control with a conventional proportional integral derivative algorithm in step (306), column 9 lines 1 – 49, Fig. 8, and

discharge pressure control with a valve control in step (200), column 9 line 50 – column 11 line 34, Fig. 9A.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 6 – 10, 16, 18, 19, 21 – 23, 25 – 28 and 30 – 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunn et al. (USPN 5820352) as applied to claim 1 above, and further in view of Kauffman et al. (USPN 5209076).

With regard to claims 6 – 8, 18, 19, 21, 23, 25 – 28 and 30 – 33, Gunn et al. disclose the invention substantially as claimed in base claim 1. Gunn et al., however, do not specifically disclose that the control member is at a remote location and communicates with communication member and a display member. Kauffman et al. disclose an apparatus for monitoring a compressor, column 1 line 57 to column 2 line 58, comprising: a plurality of inputs, compressor suction temperature (40) and pressure (42), compressor discharge temperature (48) and pressure (46), oil pressure (44), monitor control device (38, detailed in Fig. 2), electrical control panel (52); control output to printer (56) and to compressor as indicated in Fig. 1; control device (38) with microprocessor (60) communicating with sensors (40, 42, 44, 46 and 48) through analog to digital converter (90), keyboard manual inputs, real time clock interface (76), alarm interface (92), memory interface (80) and reset interface (102); display module (64) for a remote computer

screen, column 5 lines 29 – 34; analyzing and comparing inputs for control actions, column 5 line 3 to column 6 line 9. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made for a microprocessor-based control process to advantageously have microprocessor, equipped with predetermined operational parameters for controls, and located remotely in a clean environment so that it will not be contaminated and the system further equipped with a display means for operator's attention as illustrated by Kauffman et al.

With regard to claims 9, 10 and 16, Gunn et al. disclose the invention substantially as claimed in base claim. Furthermore, Kauffman et al. disclose the condition of "floodback" in column 1 lines 24 – 28 and 43 – 54. The actual superheat is computed from the sensor measurement and the compressor is automatically shut off and alarm signals are generated to indicate the presence of problem conditions, column 1 line 64 – column 2 line 6.

With regard to claim 22, Gunn et al., in view of Kauffman et al., disclose the invention as claimed in base claim 17. Kauffman et al. further teach to have remotely accessible computer to receive the inputs for controlling the compressor as such the sensor position is away from the computer. A one-foot separation between the sensor and the computer is an equipment installation issue. It does not carry patentable weight by itself unless this particular distance reveals a novel structural detail to the compressor, which has not been claimed.

3. Claims 4, 5, 20, 29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunn et al. (USPN 5820352) as applied to base claim 1 above and further in view of Allison et al. (USPN 5772403).

Gunn et al. disclose the invention substantially as claimed in base claim 1. Gunn et al., however, do not specifically disclose the commands for indicating that maintenance is needed. Allison et al. disclose that a control system, for monitoring operation of a pump including a microprocessor-based controller and a plurality of sensors, can accurately determine the next scheduled maintenance should occur, column 9 line 66 to column 10 line 5. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made for a microprocessor-based control process to advantageously record each type of fault signals in the computer memory for determining the next scheduled maintenance as taught by Allison et al.

4. Claims 11 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunn et al. (USPN 5820352) as applied in claim 1 above and further in view of Pham et al. (USPN 6318101 B1).

Gunn et al. disclose the invention substantially as claimed in base claim 1. Gunn et al., however, do not specifically disclose a liquid slugging condition. Pham et al. teach that the liquid slugging condition is a function of discharge superheat, column 2 lines 11 – 18. Gunn et al. monitor the compressor discharge temperature. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made for a microprocessor-based control process with temperature sensors to monitor the compressor discharge temperature and to determine the discharge superheat for preventing liquid slugging condition as indicated by Pham et al.

5. Claims 13 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunn et al. as applied to claim 1 above and further in view of Williams et al. (USPN 5946925).

Gunn et al. disclose the invention substantially as claimed in base claim 1. Gunn et al., however, do not specifically disclose a liquid injection valve on the compressor system. Williams et al. teach that using a liquid injection valve (36) in parallel to the solenoid valve (32) to avoid refrigerant condensate from accumulation in front of the valve and the cause of it is due to the pre-selected temperature threshold of the thermal process, column 5 lines 18 – 23 and 43 – 50 and Fig. 1. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made for a microprocessor-based control process to advantageously include a liquid injection valve to be controlled by the microprocessor in concert with the temperature sensor, which monitors the compressor discharge temperature, for preventing the accumulation of refrigerant liquid in front of the solenoid valve.

Response to Arguments

6. Applicant's arguments, see page 1- 2, filed 1/20/2004, with respect to the rejection(s)of claim(s) 1 – 34 under 35 USC§102(b) and §103(a) have been fully considered and are persuasive in view of "Declaration of Earlier Filing" by the applicants with respect to the rejection reference by Hahn et al. (USPN 6406265), paper No. 8. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in paragraphs 1 – 5, in view of a newly found reference by Gunn et al.

This Office Action is non-final to afford the applicant the opportunity to respond to the new ground of rejection.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Han Lieh Liu whose telephone number is 703-305-0860. The examiner can normally be reached on Monday - Thursday 7:30 to 16:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on 703-308-2675. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Han L Liu

Han Lieh Liu 4/1/04